Remarks/Arguments

In the Office Action being responded to the Examiner has rejected claims 16-21, 35 USC 103(a), as unpatentable over Perkins, "Mobile IP", IEEE Communications Magazine, May 1997, in view of Wiedeman et al patent 6,661,996 (hereinafter Wiedeman). In response thereto applicants have canceled claims 16 and 19 to reduce the issues being presented, have amended claim 17 to correct a word omission in the claim, have amended claim 21 further to define applicants' invention and to correct a typographical error therein, and are presenting new dependent claims 22 and 23 more precisely to define applicants' invention.

The different problems, and of course the different solutions, for Perkins and for applicants were discussed in applicants' prior Amendment. Applicants refer the Examiner to that discussion and will only here reiterate that applicants' invention is directed to a problem of synchronization of the two copies of the same data that are sent over two different paths to a mobile station where they are to be combined to effect the soft handoff.

Applicants' invention involves the discovery and recognition that a way to ensure that packets arriving at the mobile from two different base stations at the same time are copies of the same data, that is that there is synchronization at the mobile station, is to create lower level packets of the data for transmission and comparison and specifically layer -2 packets; this is described at various places in applicants' specification, particularly in the discussion of remote layering at pages 15 and 16. This is not disclosed or suggested by Perkins or by the Examiner's secondary reference Wiedeman.

The Examiner has asserted that Perkins teaches combining at a serving base station upper layer packets with data at one layer to produce lower layer packets and has specifically referred to Perkins page 93, figure 7. However, applicants respectfully submit that figure 7, in fact, shows the exact opposite. Specifically, figure 7 shows the commonly known encapsulation process where a base station (i.e., a mobility agent) puts one IP layer packet into another IP layer packet ("encapsulation"). In particular, the "IP payload" in the figure is an upper layer (a layer above the IP layer) data unit and not a lower layer data packet and specifically not at a lower layer link-layer which is the protocol layer immediately below the Internet Protocol layer. The "IP payload" plus the "IP header" on the left hand side of figure 7 represent an IP-layer packet. The right hand side of figure 7 shows still an IP-layer packet that contains (encapsulates) another IP-layer packet (the one shown on the left hand side of the same figure).

Applicants submit that, contrary to the Examiner's interpretation of Perkins, Perkins does not disclose or teach a means at the serving base station for transmitting to the target base station an encapsulated remote layered packet including a remote layered lower data packet. Instead, in Perkins, a one IP-layer packet is encapsulated into another IP-layer packet and the resulting packet is sent to the remote base station. However, in accordance with applicants' invention, to obtain the significant and unexpected results of

synchronization which allows base stations to function autonomously, yet while supporting soft handoff, the serving base station creates a layer-2, i.e., a lower layer link-layer, packet and then sends it in an IP layer packet to the remote base station. Neither this nor the resulting change in operation of hand off is shown or taught by Perkins.

Wiedeman discloses a satellite system and has no teaching or disclosure with respect to lower layer packets or link-layer packets or to problems of synchronization when combining signals from the Weideman multiple gateways. Weideman's system assumes that the data arriving at the Weideman user terminal UT from different gateways GW are synchronized, so that, as Weideman states, column 6, lines 40-44, they can be coherently combined. Weideman has no disclosure or teaching directed to achieving data synchronization when the data is sent over two different paths in an IP network; applicants do not employ any coherent combination of signals in the sense that coherent generally means using part of the signal as a feedback in the combining process.

Applicants' invention is directed to ensuring that packets arriving at the same time at the mobile terminal from multiple base stations are copies of the same data so that they can safely be combined to generate a better copy of the data. Specifically, applicants attain this goal by the serving base station creating layer-2 packets from, for example, layer 3 packets, putting a copy of each layer-2 packet in an upper IP layer packet, and sending it to the remote base station and, over its own local radio channel, to the mobile terminal. The remote base station, upon receiving such packets from the serving base station, takes out the layer-2 packets from the upper layer packets, and sends the layer-2 packets to the mobile terminal without having to repeat processing at layer 2 for this data. In accordance with applicants' invention, the two layer-2 frames arriving at the mobile terminal from the serving and the remote base stations will thus be synchronized copies of the same data.

Weideman certainly has no disclosure of these operations and combining Weideman with Perkins, who only considers encapsulating one IP layer packet into another IP layer packet, does not teach or suggest applicants' invention.

Applicants submit that these distinctions are clearly recited in the claims, as now being presented. Claims 17, 18 and 20 clearly recite the producing of the lower layer link-layer packets at a serving base station, the sending of the lower layer link-layer packets to both the target base station and the mobile, and the combining at the mobile of the lower layer link-layer packets. Claim 21 has been amended to recite that the lower layer link-layer packets are layer-2 packets, and new dependent claims 22 and 23 have been added, which dependent claims also recite that the lower layer link-layer packets are layer-2 packets.

Reconsideration and allowance of claims 17, 18, 20, and 21 and favorable consideration and allowance of new claims 22 and 23 are therefore respectfully requested.

It is believed that this application is now in condition for allowance, and such action is also requested. However, if the Examiner deems it would in any way expedite the prosecution of this application, he is invited to telephone applicants' attorney at the number set forth below.

A petition for a one month extension of time is being submitted herewith.

Respectfully submitted,

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By_____

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